REMARKS

Claims 1-15 are pending in the application. Claims 1, 3, 4, 6, 12 and 14 have been amended. Claims 2 and 13 have been canceled, without prejudice. Claims 16 and 17 have been added.

In the Office Action mailed October 7, 2002, the Examiner rejected claims 1-15 as being considered unpatentable under 35 U.S.C. 103(a) over Applicant's prior art (hereinafter "APA") and Kanda, U.S. Patent No. 5,721,798 (hereinafter "Kanda").

Regarding claims 1, 6 and 12, the Examiner stated that "it would have been obvious ... to modify Applicant's submitted prior art to have two guide pins connect between the waveguide device and the connector as taught by Kanda et al., in order to easy and highly reproducible." (Office Action of 10/7/02, page 2, bottom 3 lines, to page 3, lines 1-2). Applicant respectfully disagrees and believes it would not have been obvious to combine APA with Kanda. APA discloses a method of **permanently coupling** a fiber optic bundle and a array waveguide. (See Specification, page 1, lines 16-17). Kanda, in contrast, describes a method of **removably connecting** an optical connector and an optical waveguide. (Kanda abstract). Applicant submits it would not have been obvious to combine a method of permanently coupling devices with a method of temporarily coupling two devices.

Even if APA and Kanda were combined, at most, the combination would yield a device having two pins sticking into two alignment holes formed in both the connector and the optical waveguide. It would not yield two pins sticking into holes of the connector where there were previously only optical fibers.

Applicant has amended claim 1 as follows:

1. (Amended) A device comprising:
   a fiber optic bundle having a termination block;

an array waveguide having channels internally, the array waveguide positioned adjacent to the termination block; and

two pins each partially extending into both the termination block and the array waveguide, **wherein the termination block comprises two retainers having etched grooves in them, and the two pins extend into holes formed by placing the two etched grooves of the two retainers together**, and wherein the termination block and the array waveguide are bonded together by an epoxy. (Amended Claim 1, emphasis added).

Thus, while Kanda would show creating new holes in the fiber optic bundle, amended claim 1 claims two pins extending into holes "formed by placing the two etched grooves of the two retainers together". This has an advantage, in that by leaving some of the optical fibers of a fiber optic bundle unpopulated, pins can be inserted into those unpopulated positions (holes). Applicant has added similar limitations in claims 6 and 12.

For example, claim 6 has been amended:

6. (Amended) A method of aligning a fiber optic bundle with an array waveguide comprising:

inserting pins into holes formed in both the fiber optic bundle and the array waveguide, **wherein the holes formed in the fiber optic bundle are formed by placing two etched substrates together**; and

pressing the fiber optic bundle and the array waveguide together so that the pins extend into both the fiber optic bundle and the array waveguide, and finely aligning optical fibers in the fiber optic bundle with channels of the array waveguide.

(Amended claim 6, emphasis added).

Additionally, Applicant has amended claim 12, to more clearly show that the method comprises a coarse alignment portion and a fine alignment portion:

12. (Amended) A method of aligning a fiber optic bundle with an array waveguide comprising:

coarsely aligning the fiber optic bundle with the array waveguide by

inserting two pins into holes formed in an end of the fiber optic bundle, wherein the holes formed in the fiber optic bundle are formed by placing two etched substrates together [;],

inserting opposite ends of the two pins into the array waveguide[;], and

pressing the fiber optic bundle and the array waveguide together; and

finely aligning the fiber optic bundle with the array waveguide by adjusting the fiber optic bundle and the array waveguide to improve photonic coupling between optical fibers of the fiber optic bundle and channels of the array waveguide.

(Amended claim 12, changes indicated).

No such coarse and fine alignment are shown by APA and Kanda. Applicant respectfully submits that the amended claims 1, 6 and 12 have overcome the rejection under 35 U.S.C. 103(a) over APA and Kanda.

Regarding claim 3, the Examiner states that Applicant's submitted prior art, Figure 2 discloses the array waveguide has two holes (30) formed by an etch process. (Office Action of 10/7/02, page 3, lines 7-8). Applicant's Figure 2 does not show holes, it shows optical channels (30) within a waveguide. The optical channels are made of materials having a slightly higher index of refraction than the rest of the AWG. The channels may be formed by deposition, or other methods. (See Specification, page 2, lines 11-13).

Given that claims 3-5, 7-11, 14-15 depend, either directly or indirectly, from claims 1, 6 and 12, respectively, it is further submitted that claims 3-5, 7-11, 14-15 are patentably distinguished over APA and Kanda. Thus, Applicant respectfully submits

that claims 3-5, 7-11, 14-15 have overcome the rejection under 35 U.S.C. 103(a) over APA and Kanda.

Applicant has added new claims 16-17. Claim 16 is dependent on claim 6, and claims 17 is dependent on claim 12. For similar reasons as those argued above, Applicant submits that the new claims 16-17 are allowable.

If there are any additional charges, please charge them to our Deposit Account Number 02-2666.

Very truly yours,

Dated: 1/7/03

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Version with Markings to show changes made

1. (Amended) A device comprising:

a fiber optic bundle having a termination block;

an array waveguide having channels internally, the array waveguide positioned adjacent to the termination block; and

two pins each partially extending into both the termination block and the array waveguide, wherein the termination block comprises two retainers having etched grooves in them, and the two pins extend into holes formed by placing the two etched grooves of the two retainers together, and wherein the termination block and the array waveguide are bonded together by an epoxy.

Claim 2 has been canceled, without prejudice.

3. (Amended) The device of claim [2] 1, wherein the array waveguide has two holes formed by an etch process.

4. (Amended) The device of claim [2] 1 further comprising

a gel dispensed between the termination block and the array waveguide.

6. (Amended) A method of aligning a fiber optic bundle with an array waveguide comprising:

inserting pins into holes formed in both the fiber optic bundle and the array waveguide, wherein the holes formed in the fiber optic bundle are formed by placing two etched substrates together; and

pressing the fiber optic bundle and the array waveguide together so that the pins extend into both the fiber optic bundle and the array waveguide.

12. (Amended) A method of aligning a fiber optic bundle with an array waveguide comprising:

coarsely aligning the fiber optic bundle with the array waveguide by inserting two pins into holes formed in an end of the fiber optic bundle, wherein the holes formed in the fiber optic bundle are formed by placing two etched substrates together [;],

inserting opposite ends of the two pins into the array waveguide[;], and pressing the fiber optic bundle and the array waveguide together; and

finely aligning the fiber optic bundle with the array waveguide by adjusting the fiber optic bundle and the array waveguide to improve photonic coupling between optical fibers of the fiber optic bundle and channels of the array waveguide.

Claim 13 has been canceled, without prejudice.

14. (Amended) The method of claim [13] 12 further comprising:

dispensing an epoxy between the fiber optic bundle and the array waveguide.

16. (New) The method of claim 6, wherein the two etched substrates are placed together to form multiple holes, and the multiple holes are filled by optical fibers except for the holes with the pins inserted in them.

17. (New) The method of claim 12, wherein the two etched substrates are placed together to form multiple holes, and the multiple holes are filled by optical fibers except for the holes with the pins inserted in them.